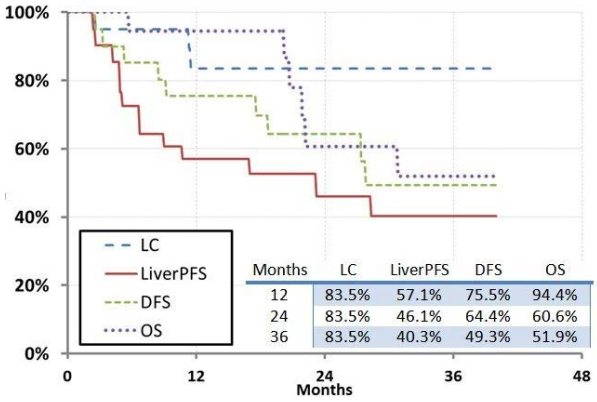
when considering a α/ß ratio of 10. The mean GTV and PTV D98% and D50% were 41.6Gy (SD:7.7) and 46.5Gy (SD:6.8) ,39.3Gy (SD:7) and 46.1Gy (SD:6.6) respectively. Each treatment was delivered by an average of 158 beams. All dose constraint parameters proposed by Timmerman were respected (Semin.Radiat.Oncol.2008). Furthermore, the average difference between the Raytracing and the Monte Carlo algorithm was 0.43% on these values. At a median follow up of 30.9 months (range: 5.7-50.3), the 1 and 2-year LC rates remained stable at 83.5%.The 1 and 2-year liver PFS and the DFS rates were 57.1%, 46.1% and 75.5%, 64.4% respectively. The 2 year OS was 60.6% (Figure 1). No acute grade 2 toxicities were observed. Three patients reported late grade 2 gastro-intestinal toxicities. No late grade 3 nor 4 toxicities were reported.



Months	LC	LiverPFS	DFS	OS
12	83.5%	57.1%	75.5%	94.4%
24	83.5%	46.1%	64.4%	60.6%
36	83.5%	40.3%	49.3%	51.9%

Conclusion: Robotic SBRT is feasible, safe and very well tolerated for the treatment of hepatic oligometastases. Our outcome results compare favorably from previous published studies of SBRT. It could represent a valid treatment option in the multimodality treatment of unresectable hepatic oligometastases.

EP-1277

Adyuvant chemoradiation for resected gallbladder cancer: single center 25-year experience

C. Solé[1], V. Solé[2]
[1]*Instituto de Radiaciones Médicas, Radiotherapy, Santiago, Chile*
[2]*Universidad San Sebastian, Medicine School, Santiago, Chile*

Purpose or Objective: Patients with locally advanced gallbladder cancer (LAGC) have a dismal prognosis. We investigated outcomes and risk factors for overall survival (OS) in patients treated with radical surgery and adyuvant chemoradiotherapy (CRT).

Material and Methods: A total of 212 patients with LAGC [⩾cT3 59% and/or cN+ 52%) were studied. For survival outcomes potential associations were assessed in univariate and multivariate analyses using the Cox proportional hazards model. We constructed a risk scoring system in which points were assigned to each risk factor by dividing each ß coefficient in the final model by the lowest ß coefficient and rounding to the nearest integer.

Results: Median follow-up was 46.2 months (2-235). Five-year OS for the entire cohort was 50.2%. In multivariate analysis higher pT stage [HR 1.73, p = 0.01], R1 resection [HR 5.06, p < 0.01], and number of surgical procedures [HR 1.41, p = 0.05] were associated with an increased risk of death. A risk model was generated to determine a prognostic index for individual patients with LAGC.

Conclusion: Overall results after multimodality treatment of LAGC are promising. Classification of risk factors for death has contributed to propose a prognostic index that could allow us to guide risk-adapted tailored treatment

EP-1278

CCRT with or without surgery using Helical Tomotherapy or IMRT for esophageal cancer patients

P.Y. Hou[1], W. Le-Jung[1], H. Chen-Hsi[1], S. Pei-Wei[1]
[1]*Far Eastern Memorial Hospital, Radiation Oncology, New Taipei City, Taiwan*

Purpose or Objective: To retrospectively review the treatment outcome of esophageal cancer in our hospital, and compare the radiotherapy efficacy and toxicity of helical tomotherapy with step-and-shoot Intensity Modulation Radiation Therapy (IMRT).

Material and Methods: Between 2007 and 2012, 108 consecutive patients with locally advanced esophageal cancer, cT2-4N0-3M0-1, received neoadjuvant concurrent chemoradiotherapy (CCRT) followed by esophagectomy or definitive CCRT treatment course respectively. The radiotherapy was delivered with helical tomotherapy in 56 patients, and with conventional IMRT in other 52 patients. We had evaluated outcomes with radiation dose, overall survival rate (OS), disease-free survival rate (DFS), and toxicity of radiation pneumonitis.

Results: The median follow-up duration was 16 months. The median time of overall survival among all patients was 15 months. The treatment modality with neoadjuvant CCRT followed by esophagectomy had favorable OS (47.6% : 10.4%, p = 0.014), DFS (42.9% : 23.9%, p = 0.013), and local recurrence (33.3% : 50.7%, p = 0.574) comparing with definitive CCRT. No significant difference outcome of OS was found between tomotherapy and conventional IMRT. The patients using tomotherapy had less incidence and severity of radiation pneumonitis (only one patient with less than grade 3 radiation pneumonitis in tomotherapy group; 5 patients < grade 3 and 2 patients > grade 3 radiation pneumonitis in conventional IMRT group).

Conclusion: In our study, the treatment outcomes of neoadjuvant CCRT followed by esophagectomy for esophageal cancer are better in OS, DFS, and local control than definitive CCRT. Tomotherapy may reduce lung dose, and probably reduce incidence and severity of radiation pneumonitis when compared with conventional IMRT.

EP-1279

SABR in inoperable liver oligometastatic patients and radioresistant primary tumors.

E. Clerici[1], T. Comito[1], L. Cozzi[1], A. Fogliata[1], A. Tozzi[1], C. Iftode[1], C. Franzese[1], P. Navarria[1], G.R. D'Agostino[1], P. Mancosu[1], F. Lobefalo[1], S. Tomatis[1], M. Scorsetti[1]
[1]*Istituto Clinico Humanitas, Radiotherapy and Radiosurgery, Rozzano Milan, Italy*

Purpose or Objective: To evaluate the feasibility and efficacy of Stereotactic Ablative Body Radiotherapy (SABR) in the treatment of liver metastases from radioresistant primary tumors.

Material and Methods: Patients with inoperable liver metastases from renal cancers, melanoma and sarcomas, not amenable to other locoregional therapies, treated with SABR were included in this retrospective study. Inclusion criteria were: Karnofsky Performance Status of 70; no evidence of progressive or untreated gross disease outside the liver; maximum tumor diameter less than 6 cm; no more than 3 liver lesions; normal liver volume greater than 1000 cm3; adequate liver function. Dose prescription ranged from 75 to 50.26Gy in 3 consecutive fractions, delivered with RapidArc VMAT, with 10MV FFF photons. Local control was defined according to RECIST criteria.Toxicity was classified according to the Common Toxicity Criteria (CTC) version 3.0.

Results: From April 2010 to October 2015, 20 patients were treated with SABR for a total number of 24 lesions. Median follow-up was 21 (range 6–58) months. In field progression was observed in 1 patient for a total of 2 lesions. One and 2

years actuarial local control (LC) rates were 100% and 88%, respectively. Median overall survival (OS) was 24 months. Actuarial OS rates at 1 and 2 years were 83% and 38%, respectively. Median progression-free survival (PFS) was 7 months. No patients experienced radiation-induced liver disease (RILD) or grade >3 toxicity.

Conclusion: SABR is an effective, safe and non-invasive alternative for the treatment of inoperable liver metastases from radioresistant tumor.

Electronic Poster: Clinical track: Lower GI (colon, rectum, anus)

EP-1280

Preoperative short vs. long course chemoradiation with delayed surgery for rectal cancer patients

M.J. Chung[1], W.K. Chung[1], D.W. Kim[1], S.H. Lee[2], S.K. Jeong[3], J.K. Hwang[4], C.S. Jeong[5]

[1]*Kyung Hee University Hospital at Gangdong, Department of Radiation Oncology, Gangdong-Gu- Seoul, Korea Republic of*

[2]*Kyung Hee University Hospital at Gangdong, Department of Surgery, Gangdong-Gu- Seoul, Korea Republic of*

[3]*Yang Hospital-Seoul, Department of Surgery, Seoul, Korea Republic of*

[4]*Yang Hospital- Namyangju, Department of Surgery, Seoul, Korea Republic of*

[5]*Hansol Hospital, Department of Surgery, Seoul, Korea Republic of*

Purpose or Objective: To compare the clinical outcomes between short course chemoradiotherapy (SCRT) and long course chemoradiotherapy (LCRT) with delayed surgery for locally advanced rectal cancer patients retrospectively.

Material and Methods: Seventy two patients, staged cT3-4N0-2M0, had participated in a multicenter study. With regard to the SCRT arm, a total dose of 25 Gy of radiotherapy was delivered in 5 fractions and chemotherapy was given on days 1-3 and delivered 5-Fluouracil and Leucovorin 400mg/m²by bolus injection on day 1 and 5-Fluouracil 1200mg/m²by continuous infusion on day 2 and 3. And additional two cycles of chemotherapy was administered before the surgery. With regard to the LCRT arm, a total dose of 50.4Gy of radiotherapy was delivered in 28 fractions. Chemotherapy was a bolus injection of 5-Fluouracil and leucovorin for the first and last week of radiotherapy. Surgery was performed during 6 - 8 weeks after completion of the radiotherapy in the both group.

Results: From 2010 to 2015, 19 patients were treated using the SCRT and 53 patients were treated using the LCRT. Median Follow-up was 25.0 months (range, 3.0-58.0 months). The patient characteristics of the both arms were not significantly different. The sphincter saving rate (89.5 %, 94.3%), complete remission (21.1%, 13.2%), downstaging (47.4%, 26.4%), treatment complications including wound dehiscence, bowel adhesion, hematologic toxicities of the SCRT were not inferior results to those of the LCRT. Locoregional recurrence was seen in 1 (5.3%) patients in the SCRT, 1 (1.9%) in the LCRT (p=0.442). Distant metastasis was ween in 1 (5.3%) patients in the SCRT, 12 (22.6%) patients in the LCRT (p=0.162). The 2-year disease free survival, overall survival in the SCRT and LCRT arms were 93.8% and 74.0% (P =0.338), 90.0% and 91.2% (P =0.448), respectively.

Conclusion: The preopeative SCRT was a effective and safe modality. We got a comparable clinical outcomes to the LCRT for locally advanced rectal cancer. We get a further study for randomized clinical study to compare between SCRT and LCRT.

EP-1281

DVH relationships in rectal cancer: effects of contouring methods and patient positioning

N. Bennion[1], Y. Lei[1], V. Verma[1], A. Bhirud[1], G. Blessie[1], C. Lin[1]

[1]*UNMC, Radiation Oncology, Omaha, USA*

Purpose or Objective: Preoperative chemoradiation for rectal cancer may cause acute bowel toxicity. Efforts to reduce such side effects include tracking bowel DVH relationships and proper patient positioning to minimize the risks. Our aim is to quantify volume and DVH relationship differences between prone and supine positioning as well as compare different contouring methods to account for such changes.

Material and Methods: Nineteen patients undergoing preoperative chemoradiation for rectal cancer were simulated supine and prone for plan comparison. Thirty-eight plans were compared, 19 prone, and 19 supine. Correlating prone and supine plans were constructed with similar target volumes, beam energies and arrangements. A single physician contoured the bowel bag (BB) and individual bowel loops (BL) with the superior border 1 cm above the PTV per RTOG guidelines. If the RTOG recommended boundaries fell short of the 5 Gy isodose line, additional CT slices were contoured on BB and BL structures to the 5 Gy isodose line and labeled as extended contours. Tabular dose-volume histograms were utilized to assess the volume of bowel receiving 5-50 Gy in 5 Gy intervals. Wilcoxon signed rank test as well as Spearman's correlation tested all variables.

Results: The target volumes showed no statistical differences between supine and prone positioning (p = 0.7344, 0.8203, 0.3594). The median reduction in volumes from supine to prone contours for the extended contour BB, extended contour BL, RTOG BB, and RTOG BL was 316 cc, 156 cc, 324 cc, and 115 cc respectively. Wilcoxon signed rank sum test showed significantly reduced volumes at each dose level (5-45 Gy at 5 Gy intervals) in the prone group compared to supine (range p = 0.0039- 0.0391). All combinations of contours (RTOG and extended contours of BB and BL) showed similar statistically significant reductions in volumes receiving each dose (except 50 Gy) in the prone position. All RTOG defined BB and BL volumes required additional contours to account for the entire volume receiving 5 Gy. RTOG contours required a median of 359 cc to the BB (range 209-1375 cc) and 113 cc to BL (range 37-271 cc).

Conclusion: Volume of bowel was less for nearly all dose levels (5 – 45 Gy) if the patient was positioned prone. Bowel loop contours correlated with bowel bag contours; suggesting they can be used interchangeably. BB and BL contoured volumes, by the RTOG definition, consistently fell short of the 5 Gy isodose line where the "extended contours" were a more complete DVH representation.

EP-1282

Does blood glucose level normalisation improve PET-based response prediction in rectal cancer?

I. Joye[1], A. Debucquoy[2], A. Wolthuis[3], A. D'Hoore[3], E. Van Cutsem[4], V. Vandecaveye[5], X. Sagaert[6], C. Deroose[7], K. Haustermans[1]

[1]*KU Leuven/University Hospitals Leuven, Department of Radiation Oncology, Leuven, Belgium*

[2]*KU Leuven, Department of Oncology, Leuven, Belgium*

[3]*University Hospitals Leuven, Department of Abdominal Surgery, Leuven, Belgium*

[4]*University Hospitals Leuven, Department of Digestive Oncology, Leuven, Belgium*

[5]*University Hospitals Leuven, Department of Radiology, Leuven, Belgium*

[6]*University Hospitals Leuven, Department of Pathology, Leuven, Belgium*

[7]*University Hospitals Leuven, Department of Nuclear Medicine, Leuven, Belgium*

Purpose or Objective: The standard treatment for locally advanced rectal cancer (LARC) is preoperative chemoradiotherapy (CRT) followed by total mesorectal excision (TME). The tumoral response to CRT is highly heterogeneous and about 15-30% of the patients achieve a pathological complete response (pCR). 18F-FDG PET/CT is